Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A process for producing a corrosion- and wear-resistant layer on a substrate by spraying on an iron oxide-based material, characterised in that the iron oxide-based material which has at least 20% by weight of magnetite (Fe_3O_4 and/or Fe_2O_3) and a pre-spray grain size of between 0.05μm and 150μm is applied by on-line controlled thermal spraying and in that during the spraying operation the layer of the material is monitored by an on-line monitoring and control system, whereby properties of the material to be deposited are measured within the thermal spray by on-line monitoring and control and wherein the thermal spraying is controlled by the on-line monitoring and control system responsive to said measured properties and the corrosion- and wear-resistant layer is produced with uniform properties in a thickness of between 80μm and 500μm.

2. (withdrawn) A process as set forth in claim 1 characterised by on-line monitoring and control by means of an ITG-camera (18) directed on to the spray jet (10), an LDA-detector (20) with LDA-laser (22) and an HSP-head (24) (Figure 1).

3. (withdrawn) A process as set forth in claim 1 characterised by on-line monitoring and control by measurement of the particle speed in the spray flame.

4. (withdrawn) A process as set forth in claim 1 characterised by on-line monitoring and control by means of measurement of the particle speed in the spray flame by a laser Doppler anemometer by means of a beam (60) which is emitted from a laser device (62) and which is divided into two partial beams (60_a, 60_b) by an optical transmission system (64) (Figure 6).

5. (withdrawn) A process as set forth in claim 1 characterised by on-line monitoring and control by measurement of the particle speed in the spray flame by means of a high-speed pyrometer.

6. (withdrawn) A process as set forth in claim 1 characterised by on-line monitoring and control in which the particle temperature in the spray flame is measured by means of infra-red thermography (Figure 3).

7. (withdrawn) A process as set forth in claim 1 characterised by on-line monitoring and control in which the measured amount of gas is analysed.

8. (withdrawn) A process as set forth in claim 1 characterised by on-line monitoring and control in which a measured amount of plasma gas is analysed.

9. (withdrawn) A process as set forth in claim 1 characterised by on-line monitoring and control in which a measured current-voltage characteristic is evaluated.

10. (previously presented) A process as set forth in claim 1 characterised by on-line monitoring and control in which an amount of powder, which is fed to the plasma spray, is measured.

11. (canceled)

12. (previously presented) A process for producing a corrosion- and wear-resistant layer as set forth in claim 1 characterised in that an on-line controlled, water-stabilised plasma spray process is used as the coating process.

13. (canceled)

14. (previously presented) A process as set forth in claim 1 characterised in that the material comprises pure magnetite.

15. (withdrawn) A process as set forth in claim 1 characterised in that the material comprises magnetite and at least one further metallic material.

16. (withdrawn) A process as set forth in claim 1 characterised in that the material comprises magnetite and at least one intermetallic compound.

17. (withdrawn) A process as set forth in claim 1 characterised by an addition of carbide or carbides or nitride or nitrides or silicide or silicides or boride or borides or oxide or oxides in the material.

18. (withdrawn) A process as set forth in claim 1 characterised by the addition of a mixture of metals, intermetallic compounds, carbides, nitrides, silicides, borides and/or oxides in the material.

19. (withdrawn) A process as set forth in claim 15 characterised by magnetite and an addition of up to 50% by weight of Cr, CrNi or a ferritic steel in the material.

20. (withdrawn) A process as set forth in claim 1 characterised in that the material comprises magnetite and carbides of W, Cr, Mo, Nb, Ta, Ti or V.

21. (withdrawn) A process as set forth in claim 20 characterised in that the material comprises magnetite with an addition of up to 30% by weight of tungsten and/or chromium carbides.

22. (canceled)

23. (withdrawn) A process as set forth in claim 1 characterised by a mixture of magnetite and chromium oxide in the material with a proportion of the chromium oxide of between 1 and 40%.

24. (canceled)

25. (withdrawn) A process as set forth in claim 1 characterised by a filling wire in the form of wire spray material whose filling comprises magnetite and whose sheath comprises an alloy.

26. (withdrawn) A process as set forth in claim 1 characterised by a powder grain with good flow properties, which is produced from the powder material mixture by spray drying.

27. (withdrawn) A process as set forth in claim 1 characterised by a powder grain which is resistant to separation of its mixture and which is produced from the powder material mixture by means of an agglomeration process.

28. (previously presented) A process for producing a corrosion- and wear-resistant layer on a substrate as set forth in claim 1 characterised in that said material to be sprayed has more than 30% by weight of magnetite (Fe_3O_4 and/or Fe_2O_3).

29. (withdrawn) A process as set forth in claim 21 characterised by magnetite and an addition of up to 40% by weight of Cr, CrNi or a ferritic steel in the material.

30. (withdrawn) A process as set forth in claim 20 characterised in that the material comprises magnetite with an addition of up to 20% by weight of tungsten and/or chromium carbides.

31. (withdrawn) A process as set forth in claim 1 characterised by a proportion of the chromium oxide of between 5 and 30% by weight.

32. (previously presented) A process as set forth in claim 1 characterised by a grain size of said material to be sprayed of between 0.1 and 120 μm.

33. (canceled)

34. (previously presented) The process of claim 1 wherein said spraying by on-line controlled thermal spraying comprising a mode of spraying selected from the group consisting of high-speed flame spraying, plasma spraying, high powered plasma spraying (HPPS), shroud plasma spraying (SPS), on-line controlled wire-flame spraying, and arc wire spraying.

35. (previously presented) The process of claim 1 wherein said spraying by on-line controlled thermal spraying comprises plasma spraying and said plasma spraying is performed in a mode selected from the group consisting of plasma spraying in air and plasma spraying in a vacuum.

36. (canceled)

37. (new) A process as set forth in claim 1 wherein the thickness is between 0.2mm and 0.5mm.

38. (new) A process as set forth in claim 1 wherein the thickness is between 80μm and 200μm.

39. (new) A process as set forth in claim 1 wherein by an in-flight particle diagnosis a particle temperature, particle speed, and particle size are measured simultaneously.

40. (new) A process as set forth in claim 1 wherein a size and shape of individual particles in the thermal spray are determined by means of particle shape imaging.

41. (new) A process as set forth in claim 1 wherein the measured properties include a particle speed of between 30m/s and 1500m/s and a particle temperature of between 1350°C and 4000°C.